REMARKS

In the Office Action, the Examiner objected to the drawings, required that Figure 1 be labeled as prior art, rejected claims 5 and 12 - 15 under section 112, second paragraph, rejected claims 1 and 3 - 9 as anticipated by Bowman et al., and rejected claims 1 - 6, 9 16 as anticipated by Farrington et al., rejected claims 7, 8, and 10 - 15 as obvious over Farrington in view of Bowman.

Drawing Objection

The drawing objection has been overcome by amendment of claim 11. The drawings as presented show the invention as claimed.

Figure 1 depicts a circuit over which Applicants' invention represents an improvement. Applicants have not determined whether the circuit represents prior art to the present invention and so decline to admit that the circuit is prior art. No additional label is being added to the Figure 1.

35 U.S.C. §112, 2nd ¶

Claim 5 is amended to clarify the invention claimed.

Claim 11 has been amended, as noted above, so that the claimed invention agrees with the circuit of the invention, as noted by the Examiner. Applicant notes that the misdescription occurs in claim 11, not claim 12 as indicated in the action.

35 U.S.C. §102(b)

The reference to **Bowman** et al. discloses a power converter with two synchronous rectifiers on the secondary winding of the transformer. The reference discloses the addition

of a separate drive winding connected to alternately energize the synchronous rectifier switches. According to column 2, lines 23 - 25, the separate drive winding is necessary to ensure adequate drive voltage.

The present invention does not require a separate drive winding for the control leads of the rectifiers. The voltage applied to the control leads of the rectifiers is obtained from the same secondary winding of the transformer as is connected to the load.

The reference of **Farrington** et al. discloses a self-driven synchronous rectifier having two rectifiers. The gate terminals of the two rectifiers are connected through two switches that have their control leads connected to the secondary winding leads of the transformer.

By contrast, the present invention provides that the control leads of the clamping switches on the control leads of the rectifiers are connected to a fixed voltage source. This provides a defined clamp threshold for the switches.

As such, the present invention as defined in the claims is not anticipated by either reference.

35 U.S.C. §103

There is no teaching in the cited references that the circuits shown therein should be combined. Nothing in the art suggests that the drive winding of Bowman could be abandoned since in Bowman it appears well settled that such a drive winding is required to overcome the problem of insufficient drive voltage.

Farrington, on the other hand, does not provide a fixed reference for limiting the control leads of the synchronous rectifiers. The operation of Farrington is completely different than the present invention. The rectifiers turn off when the transformer voltage changes polarity. There is not threshold limit disclosed or suggested here, and no reason is

provided for adding such a limit.

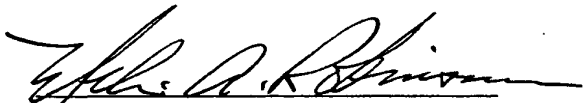
Thus, the teachings of the two prior art patents cannot be combined without resort to the teachings of the present application for a guide as to what to add and what to remove. This hindsight reconstruction of the invention is impermissible in determining patentability, however. Thus, the person of ordinary skill in the art would not find the teachings or suggestion in the prior art to make the present invention.

Accordingly, Applicants submit that the invention of the present application represents a non-obvious improvement over the prior art, whether considered alone or in combination.

Conclusion

Each issue raised in the action has been addressed. Early favorable reconsideration and allowance is hereby requested.

Respectfully submitted,



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on April 5, 2002.

VERSION MARKED TO SHOW CHANGES

The paragraph on page 2, beginning at line 11, is amended as follows:

In Figure 1, a DC voltage is applied at an input 10 [1]. Also at the input side of the DC-DC power converter is a transistor 12 which serves as a power switch. An inductor 14, a capacitor 16, and a pair of diodes 18 and 20 complete a resonant primary snubber circuit. This snubber circuit is connected to a primary side 22 of an isolation and step-down transformer 24. The secondary 26 of the transformer 24 includes two synchronous rectifiers 28 and 30. The rectified signal from the secondary 26 is filtered by an averaging filter made up of an inductor 32 and a capacitor 34. The node between the inductor 32 and the capacitor 34 serves as an output node to which is connected a load of the DC-DC power converter stage.

The paragraph on page 5, beginning at line 2, is amended as follows:

Referring to Figure 2, an input voltage 40, which [40] is supplied, for example, by a power supply unit of an electronic device, is provided at an input of a resonant primary snubber circuit including an inductor 42, capacitor 44 and diodes 46 and 48. These are connected to a primary side 50 of an isolation step-down transformer 52. A power switch in the form of a transistor 54 is also provided on the primary side 50. Although this circuit arrangement is shown for the primary side, other circuit arrangements are also possible. For example, resonant reset circuits, both active and passive, on either primary or secondary side of the transformer 51 are possible, as well as different topologies such as a two-transistor forward converter topology. For example, the converter may have a feedback loop connected to the primary side for regulation.

The claims have been amended as indicated below by the markings:

1.(Amended) A rectifier, comprising:

a reference primary circuit;

a transformer having a primary side connected to said reference primary circuit and having a secondary side;

first and second rectifiers in synchronous connection at said secondary side, said first and second rectifiers each having at least three leads, one of said three leads being a control lead; [and]

first and second clamping transistors, said first clamping transistor being connected between said control lead of said first rectifier and said secondary side, said second clamping transistor being connected between said control lead of said second rectifier and said secondary side; and

a fixed voltage source connected to control leads of said first and second transistors.

5. (Amended) A rectifier as claimed in claim 1, further comprising:

an output [of said rectifier];

a first filter element connected between said first rectifier and said output; and

a second filter element connected between said output and ground.

11.(Amended) A self-driven synchronous rectifier, comprising:

a transformer having a primary and seconding winding;

an input for an input voltage connected to said primary winding;

a pair of rectifiers connected in a synchronous connection, a [said] first rectifier of said pair of rectifiers including a source drain connection in series with a first lead of said secondary winding and a gate connected to a second lead of said secondary winding;

a second rectifier of said pair of rectifiers having a source and drain leads connected across said first and second leads of said secondary winding and a gate connected to said first [second] lead of said secondary winding;

a first transistor connected between said gate of said first rectifier and said second lead of said secondary winding;

a second transistor connected between said gate of said second rectifier and said first lead of said secondary winding; and

a voltage source connected to gates of said first and second transistors.